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## Cases in Influenza Management: Right Interventions to Achieve Earlier Return to Action

Dr. Doghramji: Hi, everyone. This is Cases in Influenza Management – The Right Interventions to Achieve Earlier Return to Action. I am Dr. Paul Doghramji. I am Medical Director of Health Services at Ursinus College in Collegeville, Pennsylvania.

Let us look at our learning objectives. We are going to evaluate the impact of influenza on at-risk individuals and communities and also we are going to integrate newer and emerging influenza agents into more personalized treatment plans.

Now, before I begin, I want to talk about a student that presents to me. She is a 20-year-old junior student. Her name is Jessica. She is a member of the swim team, and she comes in feeling just awful. She has a fever of 101.5 and her mother gave her thermometer to check her temperature. She says it is 101.5. She has a dry cough. She feels run-down, tired, muscle aches, and it all came on all of a sudden the day before she came to see me. She had one episode of vomiting. She has no appetite.

She does not even want to drink any fluids. She has not really taken any medications or anything. She has a bit of a stuffy nose, sneezing, no sore throat, earache, and she does not have a rash.

A couple of other things about her, as I said, she is on the swim team, and none of her teammates have anything like this. No symptoms like this at all. She was home for winter break, and she says that she was exposed to her younger sister who had similar symptoms just a day or two prior to coming to college out of winter break. Like I said, she has not taken any over-the-counter medicines. No treatment at all. She just comes in because she just feels awful. Interestingly, she did not get the flu shot because she says, "My parents just don't believe in them." Let us take a look at some of the challenges with influenza vaccination.

Let us look at the challenges with influenza vaccination on a college campus. Healthy students just do not worry about getting the flu. They have other things to worry about, other things to think about. They just do not think about it. Secondly, college students, they are transitioning from being responsible for managing their own health and their own concerns, but again, influenza has a tendency to be lower on their list of priorities. Number three, students have a varying level of awareness and attitudes towards the vaccine itself, and about the side effects and overall effectiveness. They read. They ask questions. They hear things. As a result, they get confused, and they just say to themselves, I am just not going to get the vaccine. Also, when the vaccine is offered, sometimes they are busy scheduled and also the other competing priorities that they have makes it difficult for them to come into the health center and get the vaccine.

They consider sometimes putting a foreign substance into their body as not necessarily being the right thing to do. Interestingly, in our college, we think that the influenza shot should be given, but we do not mandate it, so they might think if it is not important that I get it or rather, it is not insisted, then I am not going to get it anyway. They also have busy schedules. They have things that they need to do, and sometimes to stop by the health center to get a flu shot may be a little bit too much for them. We at the college campus level and many college campuses will have emails and other kinds of communication to the students to suggest come on over and get a flu shot. Sometimes they can be put to the wayside.

There is also another thing. It does cost some money. It is not free. For them to come into the health center and pay some money may be difficult to do. Certainly, even if insurance covers it, there may be some limitations with that as well.

These are all the challenges with influenza vaccine that occur at all college campuses, and we at the college campus that I am the Medical Director of, we experience these issues as well.

Let us look at this one study that took a look at vaccination rates in college campuses in one year,

which was 2013 and 2014 and also 2014 and 2015. Relatively similar, showing that in their earlier years, vaccination rates are lower than in the later years. Freshmen and sophomores have a tendency to vaccinate maybe 20%-30% of the time, and in one study with the year 2014 and 2015, the sophomores, only 10% of them got vaccinated. In the later years, as juniors and seniors, a little bit of a higher rate. Again, maybe this is because they remember how bad the flu season was the year before, and they thought to themselves, let me just get vaccinated because I do not want to go through that again, or I do not want to go through what my roommate or classmate went through.

Anyway, the earlier-year students do not vaccinate as much. Some of the things that they say, they say I am not worried about getting the flu. It is not so bad. I forgot to get it. I am too busy. I do not have the money. The vaccine is not that effective anyway. I heard that it does not really do that much. My parents do not believe in the vaccine like the student I just talked about. I do not want to put a foreign substance in my body. There is another one that I hear more and more now and then is that I heard that the flu shot actually causes the flu. These are all the different things that we have to contend with, and they are some of the beliefs that students have.

College students who get the flu, they need to know, and I think we need to know as well, that they can have an illness that lasts about seven to ten days, maybe averaging around eight days or so. I tell college students, look, if you get the flu, you are going to be out of commission for about a week or so. You are not going to be able to go to class, and you may even have to go home. It becomes really important for us to know and for them to know that it is not one of those cold symptoms they can go to class with. You cannot go to class when you have influenza.

As I said earlier, in the different years can be different rates of vaccination, and the earlier years as I said, the vaccination rate is a little bit lower than it is in the later years again maybe because they are learning about their previous years, how bad things were. In our experience, we also learned that if you have a particularly bad year, the next year there are more influenza vaccine rates than in the year before. It kind of depends on the year before and what happens. Kids have a memory of about a year or so, it seems, especially when it comes to influenza vaccination.

Influenza can be spread much more readily in a high-density location as is a college campus. On a college campus, due to this, a lot of kids living in one area, very closely, it is crowded, it is on-campus housing. There is high frequency of commonly shared spaces and objects. There is also relatively poor hygiene with less hand washing using hand sanitizers much less often. There is also a lot of sharing of food and drink. Kids will go to parties, and they will share their drinks from one another, or maybe they are in a cafeteria, they will share their food. That can be very very instrumental in the spread of the influenza virus very quickly.

The other thing that we see is that there are lower rates of prophylactic treatment among exposed college-age students. What do I mean by that? When somebody gets influenza, anybody who is exposed to them, they are offered a medication to prevent them from getting the influenza virus. A lot of times, unfortunately, they choose not to take prophylactic treatment. There is a lot of spread of the virus and even in those who are exposed to it not getting prophylactic treatment. There is just a lot of influenza that can happen on a college campus once it initially gets onto the college campus.

Let us talk about the specific experience that I had. In the college campus that I am in, it is a liberal arts college. It is a smaller college. It is 1400 students from freshman all the way to senior, of course, mostly boarders. There are 25 varsity sports, and we have a full-service health center operating similar to a family practice office where we are open from 9-5 primarily managed then and manned by a mid-level either nurse practitioner or physician assistant, and there is a physician presence there for several hours a day. We are on call the rest of the time for students to call during off hours.

Now, as far as the influenza vaccine is concerned, it is an optional but a strongly advised vaccine even though all students are mandated to be fully vaccinated for all the other vaccines as per the Center for Disease Control. This influenza vaccine is offered at a nominal cost to students on numerous occasions during the fall and winter season. We send them email blasts. We have posters. Again, all the things that they need to know to make an educated decision about coming in and getting the vaccine at the health center. Despite doing this, our vaccination rate is around 15% to 20%, depending on the year. As far as the influenza experience, every year influenza is seen on college campus starting as early as November but more typically in the second semester like January through March. Once it happens, all of a sudden, they will keep coming in. Almost every day, we will see one, two, or three kids coming in with influenza.

They come in with acute illness symptoms with abrupt onset. The fever, generally 101 or higher. I can go as high as 103 or 104 with students that have these temperatures. Severe myalgias, dry coughing. Sometimes they will have a sore throat and a stuffy nose. Sometimes they will have a headache. In fact, when they have a headache, it can be pretty severe. Occasional nausea and vomiting and diarrhea. Sometimes when they come in really early, like within a couple of hours of the fever, they might not have the cough. If influenza is going around campus, we might find ourselves, even if they do not have a cough yet, doing an influenza test on them if they have a fever and maybe a slight stuffy nose or so. We generally do a rapid flu test on pretty much everybody that we suspect as having influenza.

In this typical case that I talked about, Jessica, we tested her, and she was positive for influenza A. In

her case, she is not a local student. She is a boarder. She is from out of state. If she is a local student, we would normally say to her, listen, go home and recover there. It is typical for us to do so because it is a lot easier for them to get better plus also they cannot spread the illness. We give them the option to go home. If she is close from out of state, maybe I will even ask her to do that. In our area, we are in Pennsylvania. New Jersey is relatively close, like an hour and half, two hours away. Maybe they go home to recover there. In her case, we offer her treatment. Over-the-counter medications like acetaminophen are a great idea. We even have guaifenesin containing cough syrup that we can give her just for symptom relief. Then there is also medication that we can give specifically to the virus that she has.

We have to consider the viral load, the viral shedding. These are very important. How long has she had the illness? How long do we think the illness will last? We also consider as far as medication, the antiviral medications, the side effect profile. We look at dosing schedule. We look at potential side effects, insurance coverage, and cost.

Let us also talk about antiviral treatments. There are now two options that we have. Oseltamivir has been around for quite a while, and that is 30 mg to be given twice a day for five days. There is now also a newer agent, baloxavir, 40 mg to be given two tablets as a single dose. Both are to be given when the onset of symptoms is within 48 hours or less to help reduce viral load, viral shedding, to reduce the length of the illness. These are all very important then for the students who are sick. We want to consider with these medications the dosing schedule. As I said, oseltamivir is 30 mg to be given twice a day for five days. That is ten different doses versus baloxavir, which is one dose. That makes baloxavir more attractive. Then we also have the availability and also coverage by insurance and also costs, and because oseltamivir is generic, that may become more attractive, so it is important to consider these issues when it comes to which medication to prescribe.

Jessica was also advised to alert the swim team, to let them know that she has influenza, and also to alert her roommate that she has influenza just so that they can be given the option for influenza prophylactic medication. This can be a bit of a problem and a bit of a challenge because there you have a swim team and then you also have the trainers that are not just worrying about the swim team itself and also the coaches worrying about the swim team, but they can spread to other teams and to other sports. This can be a problem. How do we get them all into the health center. Which ones are going to want to decide to be on medication and which one is not? If they decide not to be on medication, certainly they can come down with influenza. These can be pretty big challenges in a college situation with kids that have roommates as well as kids that are on athletic teams.

Again, both of these can be used for the treatment of influenza, but now let us talk also about prophylaxis of exposed individuals like in this case. What about her roommate? What about her teammates? Also, oseltamivir is, in fact, indicated to be used for prophylaxis. Let us say her roommate comes in and says I do not want to get influenza. We can actually offer her oseltamivir, which can be taken one capsule once a day for ten days. That has been shown to be quite effective. Interestingly, a new study has come out. It is a phase 3 clinical study showing that the baloxavir can also be given as a one-time single dose, and it has been shown to prevent the occurrence of influenza in patients taken who are exposed to influenza. It can actually reduce the rate of getting influenza by about eight- or nine-fold when it was done in this clinical trial.

Let us go back to Jessica and let us talk about what we are going to do next for her. We are going to advise her to return if there is any worsening symptoms. Sometimes influenza can progress and go into respiratory problems, so we want to tell her that. We want to tell her to return when she is afebrile to clear her to return to sports and to classes. We also need to know about the red flags, and students are told this as well. We actually give them a handout for them to read, not too long but just enough to give them the right information. On there it says, please let us know if you get shortness of breath with or without chest pain, if the fever goes much higher than 103, like 103.5 or higher. Tell us if your are unable to keep fluids down. Tell us if you feel like you are going to pass out or if you actually do pass out. Tell us about severe or worsening headache, and really any indication of worsening. These are all the different things that we tell our patients as to what to do when they have influenza.

Let us finish up by talking about some of your take-home messages. First of all, please let your students know that influenza is a pretty contagious and severe illness that can really put you out at least for a week or so, and sometimes it can be quite severe and hospitalize you. Make sure students know how to get to you relatively quickly when they have these symptoms. Also let them know that there is medication that you can use to treat them when they get influenza, but also that if they do have influenza, that those who are exposed to influenza can get prophylactic treatment. Finally, and so important, make sure you tell students that they can get the influenza vaccine, which can be highly protective. That concludes our program. Thanks for tuning in.